

If V_0 is 0.5 ft. per second, the maximum displacement is 0.1248 inch, and the acceleration is found to be 24 ft/sec², which equals 0.75" g".

If the paintbrush weighs 0.5 pound and is subjected to an additional 0.75" g", the maximum downward force of the paintbrush is 0.875 pound.

If the force of magnetic attraction is 5.0 pound and the coefficient of static friction is 0.2, the frictional force is 1.0 pound and the brush should not slide off the magnet.

The advantage of the present invention can best be seen by combining the equation given above for the maximum acceleration a with the equation for the maximum displacement D , giving

$$a = \frac{K}{M} D = \frac{K}{M} V_0 \sqrt{\frac{M}{K}} = V_0 \sqrt{\frac{K}{M}}$$

From this equation it is seen that, assuming the mass M and the velocity of the brush to be constant, the maximum acceleration of the brush is proportional to the square root of K . The stiffer the resilient member is, the greater the maximum acceleration. In the above example it was assumed that the spring had a force constant K equal to 3 pound per inch (equals 36 lb./ft.).

By way of contrast, if the spring were replaced by a rigid bracket such as those used in the prior art, the force constant K could be 3 lb. per hundredth of an inch (equals 3600 lb./ft.). It is seen that, in this example, the use of the spring instead of a rigid bracket reduces the maximum acceleration of the brush by a factor of 10, from 7.5" g" to 0.75" g", and the maximum downward force of the paintbrush is reduced from 4.25 pounds to 0.875 pound. This reduction clearly makes the difference between the paintbrush remaining on the magnet and it's being jarred off the magnet and falling into the paint.

Thus, there has been described a magnetic paintbrush holder that incorporates a resilient member to reduce the mechanical shocks felt by the brush.

The foregoing detailed description is illustrative of several embodiments of the invention, and it is to be understood that additional embodiments thereof will be obvious to those skilled in the art. The embodiments described herein together with those additional embodiments are considered to be within the scope of the invention.

What is claimed is:

6 a resilient member having a first portion attached to said clamp and having
7 a second portion attached to said magnet.

1 3. The holder of Claim 1 wherein said resilient member is a length of a
2 resilient material.

- 1
- 2
- 3
- 4

1

1
2